

Fluor Federal Services

CONTROLLING ORGANIZATION'S CONTROL OF HAZARDOUS ENERGY

GUIDELINES FOR DETERMINING NEED FOR LOCKOUT/TAGOUT

This section provides guidelines to meet the minimum requirements for hazardous energy isolation and control. Each organization must determine its own criteria for lockout and tagout based on the risk to the worker and the hazards associated with the work.

1. Isolating Electrical Energy

De-energize all electrical energy when there is a potential for personnel contact with exposed, energized electrical parts or when working within the limited approach boundary.

a. Electrical Distribution

Open, and lock and tag out electrical breakers, disconnects, or hot leads that provide direct power to the area to be worked. Isolate, lock and tag out control power as appropriate for the work to be performed.

b. Electrical Control Circuits

Do not use electrical control circuits as boundary isolation points because they do not provide adequate protection to interrupt main power. You may tag them to protect the equipment, but they are insufficient to provide a safe condition and isolation boundary for personnel protection.

c. Electrical Breakers

Use racking out breakers, or removing control power fuses, as appropriate, to ensure positive isolation and to prevent the unexpected energizing of the circuit.

d. Electrical Tagout Requirements

A tag used without a lock must be supplemented by at least 1 additional safety measure that provides a level of safety equivalent to that obtained by the use of a lock. Examples of additional safety measures include the removal of an isolating circuit element, blocking of a controlling switch or opening of an extra disconnecting device. Document all steps taken in order to demonstrate that the tagout procedure is as effective as a lockout.

e. Simple Plug-In Electrical Tools/Equipment

Lockouts/tagouts are not required for plug-in electrical equipment if both the following apply:

Exposure to the hazards of unexpected energization or startup of the equipment is controlled by unplugging the equipment from the energy source.

The plug is, at all times, under the exclusive control of the employee performing the service or maintenance.

f. Energized Electrical Work

Work on energized parts is conducted only as permitted by management and safety and under the guidelines of energized electrical work.

Fluor Federal Services

CONTROLLING ORGANIZATION'S CONTROL OF HAZARDOUS ENERGY

2. Isolating Rotating or Moving Equipment

Note!!! Section 1 above is not required in addition to this section if the safe-condition check in this section ensures the safety of the worker.

- a. Isolate, lock, and tag out the main power disconnects for working on rotating equipment. If a disconnect is unavailable or is in the work scope, use the next upstream power supply (breaker).
- b. Do not use power control switches as boundary isolation points because they do not provide adequate protection to interrupt main power. They may be tagged to notify the user and prevent local operation but are insufficient to provide a safe condition and isolation boundary for personnel protection.
- c. If isolation from an energy source does not eliminate the potential for hazardous movement of equipment, block or otherwise secure the equipment to prevent such movement. Lock and tag out the blocking or securing devices in place.

3. Isolating Engine-Driven Equipment (except motor vehicles)

- a. Disconnect batteries or other sources of power.
- b. Remove or disconnect 1 or more essential operating parts (such as coil wire or rotor), lock and tag out.
- c. For well-drilling rigs:

Develop specific lock and tag procedures in work documents for drilling rigs, in accordance with a Job Safety Analysis, that meet requirements of the Lock and Tag program.

If well-drilling rigs are equipped with ignition switches, subparagraphs a and b above are not required. Instead, perform the following:

- Remove the ignition key from the switch
- Place a completed Danger Tag at the ignition switch
- Put the key in your pocket so that it is not accessible to anyone else.

4. Isolating Low Temperature/Pressure Fluid Systems (liquid or gas)

Note!!! Although steam condensate systems usually operate at relatively low temperatures and pressures, backfeeds, multiple energy sources, or trap failures, may create significant hazards for personnel. Evaluate each situation carefully.

Use the following methods, as appropriate, for fluid (liquid or gas) systems with maximum operating temperatures of less than 93 °C (200 °F) and maximum operating pressures of less than 3450 kPa (500 psig) and presenting a hazard.

- a. Isolate systems and components that normally operate at temperatures and pressures above ambient using at least 1 valve between the work area and any heated or pressurized fluid, vented and, if possible, drained.
- b. If possible, keep the equipment depressurized by opening a vent or drain in the isolated portion of the system (allowing for thermal expansion/contraction).
- c. If a normal depressurization path cannot be provided within the work boundary, use a written plan that identifies other methods to ensure that the system or component is adequately depressurized and drained (such as loosening the fasteners on flanged connections or valve bonnets, or removing instrument tubing).

Fluor Federal Services

CONTROLLING ORGANIZATION'S CONTROL OF HAZARDOUS ENERGY

5. Isolating High Temperature/Pressure Systems

Note!!! Although steam condensate systems usually operate at relatively low temperatures and pressures, backfeeds, multiple energy sources, or trap failures may create significant hazards to personnel. For this reason evaluate each situation carefully.

When isolating systems or equipment whose operating temperature exceeds 93 °C (200 °F) or operating pressure exceeds 3450 kPa (500 psig), observe the following limits in addition to those above.

- a. Use at least 2 shutoff valves in series ("2-valve protection") to provide isolation from the fluid. Apply the requirements for 2-valve protection to all paths where the fluid could cross the work boundary.
- b. Single-valve isolation may be used if the system operating controls are locked/tagged so that pressures greater than 3450 kPa (500 psig) or temperatures greater than 93 °C (200 °F) cannot be reached. (For example, if a boiler is cooled down for maintenance and its operating controls are locked and tagged, work on the steam system can be done with single-valve isolation.)
- c. If the required 2-valve protection cannot be obtained and the system must remain in operation, FFS management or facility management may authorize single-valve isolation, provided these 3 conditions are all met:

Alternate isolation devices (such as blank flanges, blocks, or freeze seals) have been considered and determined to be unfeasible or impracticable.

Approval of the single-valve isolation is documented on the Tagout Authorization Form.

The integrity of the single isolation valve is verified by venting or draining the portion of the system to be worked on and observing for leakage for at least 15 minutes to verify positive valve closure and leak tightness before starting work.

- d. Whenever possible, a Danger-Do Not Operate Tag or Danger Tag is installed on an open atmospheric drain or vent between the equipment in order to depressurize the equipment and to accommodate thermal expansion or contraction.

Special Note!!! If the conditions above cannot be met, a written work plan identifying the hazards and work methods is developed and used. If installing an isolating device to achieve 2-valve protection in a single-valve condition, use a written work plan identifying the hazards and work methods to achieve 2-valve protection.

6. Valve Isolation Practices

a. Valves That Fail Open

Pneumatically or electrically operated valves that fail open are not considered shut for isolation purposes unless the valve operating supplies are isolated, locked, and tagged out; and a jacking device or gag is installed, locked, and tagged out to shut or keep the valve shut.

b. Valves That Fail Shut

Pneumatically or electrically operated valves that fail shut are not considered shut for isolation purposes unless the valves are verified shut and the valve operating supplies are isolated, locked, and tagged out.

Fluor Federal Services

CONTROLLING ORGANIZATION'S CONTROL OF HAZARDOUS ENERGY

c. Relief Valves

Relief valves and pressure safety valves are not used for isolation purposes.

d. Valve Operating Power

To use a pneumatically or electrically operated valve as an energy control boundary, isolate the motive energy source for the valve and lock/tag out after the valve is in the required position.

e. Lock and Tag Out all Valve Operators

Lock and tag out all local and remote pneumatic and electric valve operators when the valve is used as a system isolation boundary point.

f. Regulators/Check Valves

Do not use regulators and check valves as isolation boundary valves unless the valve is mechanically restrained in the required position with a gagging device designed for that purpose.

g. Valve Actuator Work

Consider additional isolation and specify as necessary to ensure protection when working on valve motor actuators with manual overrides, springs, or other operating mechanisms.

7. Stored Energy Considerations

After lockouts/tagouts are applied to energy isolating devices; relieve, disconnect, restrain, and otherwise make safe all potentially hazardous stored or residual energy.